

TOWARD A THEORY OF HYPNOTIC BEHAVIOR: EFFECTS ON SUGGESTIBILITY OF DEFINING THE SITUATION AS HYPNOSIS AND DEFINING RESPONSE TO SUGGESTIONS AS EASY¹

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96 Ss participated in a 2×2 factorial experiment which was designed to assess the effects on suggestibility of: defining the situation as hypnosis or as control, and defining response to suggestions as easy or as difficult. The dependent variables consisted of responses to 8 standardized test suggestions (Barber Suggestibility Scale). Ss told "You are in the hypnosis group" were more responsive to suggestions than Ss told "You are in the control group." Ss told that it was easy to respond to test suggestions were more suggestible than Ss told that it was difficult. The suggestibility-enhancing effects of the independent variables were additive: the level of suggestibility was highest when the situation was defined as hypnosis and the test suggestions as easy; next highest when either the situation was defined as hypnosis or the suggestions as easy; and lowest when the situation was defined as control and the suggestions as difficult.

Procedures labeled as hypnotic inductions characteristically include four major components: the situation is defined as hypnosis, 1; an attempt is made to motivate the subject to cooperate and to respond to the best of his ability on assigned tasks, 2; relaxation, drowsiness, and sleep are suggested, 3; and an attempt is made to induce the subject to believe that it is now easy to respond to suggestions which under other circumstances might be considered difficult, 4. The present experiment is one in a series (Barber & Calverley, 1962, 1963b, 1963c) which attempts to specify which of these components are necessary and which irrelevant to producing enhanced response to suggestions of limb rigidity, sensory hallucination, body immobility, selective amnesia, and so on. The experiment focuses on Components 1 and 4—defining the situation as hypnosis and defining response to suggestions as easy—and asks the following questions:

1. Is a higher level of response to suggestions obtained when the experimental situation is defined as hypnosis rather than as control?

2. Are subjects more suggestible when they are told that it is easy to respond to test suggestions as compared to when they are told that it is difficult?

3. Which of the following single or combined factors is most effective in producing a high level of response to suggestions of the type traditionally associated with the word "hypnosis": defining the experimental situation as hypnosis; defining the situation as a control experiment; defining response to test suggestions as easy; defining response to test suggestions as difficult; defining the situation as hypnosis and response to suggestions as easy; defining the situation as hypnosis and response to suggestions as difficult; defining the situation as control and response to suggestions as easy; defining the situation as control and response to suggestions as difficult?

METHOD

Experimental Design

The experiment includes two factors each at two levels: definition of the situation as hypnosis and as control, definition of response to test suggestions as

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easy and as difficult. The 2×2 factorial design requires four experimental groups: Group A, definition of the situation as hypnosis and response to test suggestions as easy (hypnosis-easy); Group B, definition of the situation as hypnosis and response to test suggestions as difficult (hypnosis-difficult); Group C, definition of the situation as control and response to test suggestions as easy (control-easy); and Group D, definition of the situation as control and response to test suggestions as difficult (control-difficult).

Subjects

The subjects consisted of 96 students (79 males and 17 females) attending three sections of the Fall 1963 introductory psychology course at Worcester Junior College. None of the students had participated in our previous studies. One week prior to the experiment they were informed by the class instructor that they were required to participate in an experiment in which one half, selected at random, would be hypnotized and the others would serve in a control group and would not be hypnotized. The subjects were assigned at random to the four experimental groups, with 24 to each group, and were tested individually by one experimenter (DSC). All experimental sessions were conducted in one room provided by the college.

Procedure (Independent Variables)

Definition of the situation as hypnosis-control. The preliminary instructions for Group A (hypnosis-easy) and Group B (hypnosis-difficult) were:

You have been selected by chance to be in the hypnosis group and you are going to be hypnotized. While you are hypnotized I'm going to give you some tests.

Instructions for Group C (control-easy) and Group D (control-difficult) were:

You have been selected by chance to be in the control group and you will not be hypnotized. Instead, I'm going to give you some tests.

Definition of response to test suggestions as easy-difficult. Immediately following the above instructions, Group A and Group C were told:

Almost everyone that I've tested before passed these tests easily. It's not difficult. For example, I asked people to close their eyes and to imagine that they were in a movie theater and were watching a show. Most people were able to do this very well; they were able to imagine a movie and felt as if they were actually looking at the picture. However, a few people thought that this was an awkward or silly thing to do and did not use their imagination in this way. Yet, when these people later realized that it was a very easy test, they visualized the movie picture and they felt as if the imagined movie was as vivid and as real as an actual movie. I expect that you too will find these tests easy.

Subjects allocated to Group B and Group D were told:

Almost everyone that I've tested before found that it was very difficult to pass these tests. For example, I asked people to close their eyes and to imagine that they were in a movie theater and were watching a show. Very few people were able to actually see the movie and very few succeeded in actually seeing the movie even when tested a second time. I expect that you too will find these tests difficult.

Final instructions. All subjects were next told that the entire procedure would be presented by tape recording and they were asked to listen to the recorded presentation and to try to imagine the items that would be described to them.

On the tape were eight standardized test suggestions (Barber Suggestibility Scale).² The voice on the tape recording was that of the experimenter (DSC).

Dependent Variables

The dependent measures consisted of Objective scores, Subjective scores, and Verbalized Resistance scores on the Barber Suggestibility Scale.

Objective scores. The Barber Suggestibility Scale consists of eight standardized test suggestions: Arm Lowering, Arm Levitation, Hand Lock (inability to unclasp hands), Thirst "Hallucination," Verbal Inhibition (inability to speak name), Body Immobility, "Posthypnotic-Like" Response (to cough when presented with a cue), and Selective Amnesia (for the Arm Levitation item). A verbatim account of the test suggestions and the methods used to score responses objectively is presented by Barber and Calverley (1963a) and Barber, Karacan, and Calverley (in press) and norms for the scale together with reliability data are presented by Barber and Calverley (1962, 1963a, 1963b, 1963c) and Barber and Glass (1962). The maximum Objective score obtainable on the scale was 8 points.

Subjective scores. Immediately after the Suggestibility Scale had been administered by tape recording and scored objectively, the recording was turned off and the experimenter described each test suggestion that the subject had passed with an Objective score of either $\frac{1}{2}$ or 1 point and asked, "Did you actually feel [the suggested effect] or did you go along with the suggestion in order to follow instructions or to please me?" Subjective scores were assigned as follows: 1 point for each test suggestion that the subject said that he had "felt." The maximum Subjective score obtainable was 8 points.

Verbalized Resistance scores. Following the above, the experimenter described each of the eight test suggestions and asked the subject if he had tried to resist the suggested effect. (For example, with respect

² A recent study (Barber & Calverley, 1964) found that scores on the Barber Suggestibility Scale did not differ significantly when the scale was presented orally by the experimenter and when presented by tape recording.

TABLE 1

ANALYSES OF VARIANCE OF OBJECTIVE SCORES, SUBJECTIVE SCORES, AND VERBALIZED RESISTANCE SCORES ON BARBER SUGGESTIBILITY SCALE

Source	df	1 Objective scores		2 Subjective scores		3 Verbalized Resistance scores	
		MS	F	MS	F	MS	F
Definition of the situation (A)	1	75.50	25.25***	51.74	14.95***	58.59	15.83***
Definition of response to test suggestions (B)	1	31.51	10.53**	23.01	6.65**	12.76	3.45*
A \times B	1	2.35		3.76	1.09	2.34	
Error	92	2.99		3.46		3.70	

* $p < .10$.** $p < .025$.*** $p < .001$.

to Item 1, Arm Lowering, the experimenter asked, "Did you try to keep your arm from coming down?") Verbalized Resistance scores were assigned as follows: 1 point for each of the eight test suggestions which the subject said that he had tried to resist.

Immediately after Verbalized Resistance was scored, the subject was admonished not to discuss the procedure with the other subjects, and was then dismissed.

RESULTS

The results are presented separately for each dependent variable: Objective scores, Subjective scores, and Verbalized Resistance scores, on the Barber Suggestibility Scale.

Objective Scores

A summary of an analysis of variance performed on Objective scores is presented in Table 1 (Column 1) and a 2×2 classification of the mean Objective scores is presented in Table 2. These tables show the following:

1. The definition of the situation had a highly significant effect on Objective scores ($p < .001$); that is, the mean Objective score (3.96) obtained when the situation was defined as hypnosis was significantly higher than the mean Objective score (2.20) obtained when the situation was defined as a control experiment.

2. The main effect of definition of response to test suggestions was significant ($p < .025$); that is, the mean Objective score (3.66) obtained when response to suggestions was defined as easy was significantly higher than the mean Objective score (2.51) obtained when response to suggestions was defined as difficult.

3. Definition of the situation did not interact with definition of response to test suggestions.

Table 3 (Column 1) presents the mean Objective scores on each of the eight test suggestions separately for subjects tested under a hypnosis and subjects tested under a control definition of the situation, and separately for subjects told that it was easy and subjects told that it was difficult to pass the tests. This table shows that: scores on *each* of the eight test suggestions tended to be higher when the situation was defined as hypnosis rather than as control; and scores on *each* of the eight test suggestions tended to be higher when response to suggestions was defined as easy rather than as difficult.

Duncan (1955) multiple range tests performed on the mean Objective scores on the total scale showed the following (see Table 2): The mean Objective score (4.69) of

TABLE 2
TWO BY TWO CLASSIFICATION OF MEAN
OBJECTIVE SCORES

Definition of response to test suggestions	Definition of the situation		
	Hypnosis	Control	Average
Easy	4.69 _a (Group A)	2.62 _{bc} (Group C)	3.66 (Groups A and C)
Difficult	3.22 _b (Group B)	1.79 _c (Group D)	2.51 (Groups B and D)
Average	3.96 (Groups A and B)	2.20 (Groups C and D)	

Note.—Cell means containing a subscript letter in common do not differ significantly from each other at the .05 level by Duncan multiple range test.

TABLE 3
MEAN OBJECTIVE SCORES, SUBJECTIVE SCORES, AND VERBALIZED RESISTANCE SCORES ON EACH OF EIGHT TEST SUGGESTIONS ON BARBER SUGGESTIBILITY SCALE

Test suggestions	1 Objective scores			2 Subjective scores			3 Verbalized Resistance scores		
	Definition of the situation			Definition of the situation			Definition of response to test suggestions		
	Definition of response to test suggestions			Definition of response to test suggestions			Definition of the situation		
	Hypnosis (Groups A and B)	Control (Groups C and D)	Easy (Groups A and C)	Difficult (Groups B and D)	Hypnosis (Groups A and B)	Control (Groups C and D)	Easy (Groups A and C)	Difficult (Groups B and D)	Definition of response to test suggestions
1. Arm Lowering	.479	.125	.396	.208	.479	.104	.375	.208	.583
2. Arm Levitation	.292	.125	.292	.125	.271	.125	.270	.125	.604
3. Hand Lock	.781	.552	.729	.604	.667	.479	.625	.521	.083
4. Thirst "Hallucination"	.573	.427	.542	.458	.604	.562	.625	.542	.188
5. Verbal Inhibition	.614	.302	.594	.333	.479	.146	.375	.250	.208
6. Body Immobility	.614	.333	.562	.385	.542	.270	.500	.312	.271
7. "Posthypnotic-Like" Response	.417	.271	.396	.292	.229	.125	.250	.104	.312
8. Selective Amnesia	.188	.062	.146	.104	.167	.062	.125	.104	.604
Total scale	3.958	2.197	3.657	2.509	3.438	1.873	3.145	2.166	2.853

Group A was significantly higher than the mean Objective scores of the other three groups. The mean Objective score (3.22) of Group B did not differ significantly from the mean score (2.62) of Group C. The mean Objective score (1.79) of Group D was not significantly different from the mean score of Group C but was significantly smaller than the mean scores of Group A and Group B.

Subjective Scores

Subjective scores were correlated with Objective scores ($r = .79, .92, .88, \text{ and } .81$ for Groups A, B, C, and D, respectively). This positive relationship between Subjective and Objective scores was reflected in the statistical analyses summarized below; that is, the effects of definition of the situation and definition of response to test suggestions on subjects' testimony that they "felt" the suggested effects (Subjective scores) were closely comparable to their effects on subjects' overt responses to the test suggestions (Objective scores).

A summary of the variance analysis performed on Subjective scores is presented in Table 1 (Column 2) and a 2×2 classification of the mean Subjective scores is presented in Table 4. These tables show the following:

1. The main effect of definition of the situation was highly significant ($p < .001$); that is, the overall mean Subjective score (3.44) obtained when the situation was defined as hypnosis was significantly higher than the overall mean Subjective score (1.87) obtained when the situation was defined as a control experiment.

2. Definition of response to test suggestions had a significant effect on Subjective scores ($p < .025$). Subjects stated that they "felt" more of the suggested effects when response to test suggestions was defined as easy rather than as difficult ($M = 3.14$ and 2.17 for response defined as easy and as difficult, respectively).

Table 3 (Column 2) shows that Subjective scores on each of the eight test suggestions tended to be higher: when the situation was defined as hypnosis rather than as control,

TABLE 4
TWO BY TWO CLASSIFICATION OF MEAN
SUBJECTIVE SCORES

Definition of response to test suggestions	Definition of the situation		
	Hypnosis	Control	Average
Easy	4.12 _a (Group A)	2.17 _{bc} (Group C)	3.14 (Groups A and C)
Difficult	2.75 _b (Group B)	1.58 _c (Group D)	2.17 (Groups B and D)
Average	3.44 (Groups A and B)	1.87 (Groups C and D)	

Note.—Cell means containing a subscript letter in common do not differ significantly from each other at the .05 level by Duncan test.

and when response to the tests was defined as easy rather than as difficult.

Duncan multiple range tests, summarized in Table 4, showed that the mean Subjective score on the total scale (4.12) of Group A was significantly higher than the mean Subjective scores of the other three groups. The mean Subjective score (2.75) of Group B and the mean score (2.17) of Group C did not differ significantly from each other. The mean Subjective score (1.58) of Group D did not differ significantly from the mean score of Group C but was significantly smaller than the mean scores of Group A and Group B.

Verbalized Resistance Scores

The product-moment correlation between Verbalized Resistance scores and Objective scores was $-.54$; the correlation between Verbalized Resistance scores and Subjective scores was $-.42$, $p < .01$. The data thus indicated that: the greater the number of suggested effects the subjects said they had tried to resist, the less they had responded overtly to the test suggestions and the smaller the number of suggested effects that they "felt." The inverse relationship between Verbalized Resistance and Objective and Subjective responses was reflected in the statistical analyses described below.

Table 1 (Column 3) summarizes the analysis of variance for Verbalized Resistance scores and Table 5 presents a 2×2

classification of the means. These tables show the following:

1. When the situation was defined as hypnosis subjects reported that they resisted significantly less ($p < .001$) than when the situation was defined as control ($M = 2.85$ and 4.42 for situation defined as hypnosis and control, respectively).

2. Subjects tended to report ($p < .10$) that they tried to resist fewer of the suggested effects when response to suggestions was defined as easy rather than as difficult ($M = 3.27$ and 4.00 for response defined as easy and difficult, respectively).

Table 3 (Column 3) shows that: Verbalized Resistance scores on each of the eight test suggestions tended to be smaller when the situation was defined as hypnosis rather than as control; and Verbalized Resistance scores on six of the eight test suggestions tended to be smaller when the tests were defined as easy rather than as difficult.

Duncan multiple range tests (Table 5) showed that the mean Verbalized Resistance score on the total scale (2.33) of Group A was significantly smaller than the mean scores of the other three groups. The mean Verbalized Resistance score (3.38) of Group B did not differ significantly from the mean score (4.21) of Group C. The mean Verbalized Resistance score (4.63) of Group D was not significantly different from the mean score of Group C but was significantly larger than the mean scores of Group A and Group B.

TABLE 5
TWO BY TWO CLASSIFICATION OF MEAN
VERBALIZED RESISTANCE SCORES

Definition of response to test suggestions	Definition of the situation		
	Hypnosis	Control	Average
Easy	2.33 _a (Group A)	4.21 _{bc} (Group C)	3.27 (Groups A and C)
Difficult	3.38 _b (Group B)	4.63 _c (Group D)	4.00 (Groups B and D)
Average	2.85 (Groups A and B)	4.42 (Groups C and D)	

Note.—Cell means containing a subscript letter in common do not differ from each other at the .05 level by Duncan test.

DISCUSSION

The findings are discussed under four major headings: effect on suggestibility of definition of the situation as hypnosis-control, effect on suggestibility of definition of response to test suggestions as easy-difficult, additivity of the independent variables, and limitations of the investigation and suggestions for further research.

Effect on Suggestibility of Definition of the Situation as Hypnosis-Control

Group A subjects were told that they had been assigned to the hypnosis treatment whereas Group C subjects were told that they had been assigned to the control treatment. Otherwise the procedure for Groups A and C was identical; both groups were told that it was easy to pass the tests and both groups were given the test suggestions in the same way by tape recording. Subjects told "You are in the hypnosis group" were more responsive to the test suggestions than subjects told "You are in the control group." On the average, Group A responded overtly to approximately five of the eight test suggestions whereas Group C responded to less than three; Group A subjects stated that they "felt" at least four of the suggested effects whereas Group C subjects stated that they "felt" only two; and Group A subjects testified that they tried to resist approximately two of the test suggestions whereas Group C subjects testified that they tried to resist more than four.

Similar findings were obtained with Groups B and D. Group B was told that it was to be hypnotized and Group D was told that it would serve as a control. Otherwise the procedure was identical; both groups were told that it was difficult to pass the tests and were given the suggestibility scale in the same way by tape recording. Again, subjects were more responsive to suggestions when they were told that they had been assigned to the hypnosis treatment: Subjects in Group B showed more overt response to the suggestions and testified that they "felt" more and tried to resist fewer of the suggested effects than subjects in Group D.

In brief, the manner in which the experimental situation was defined to the subjects had a clear-cut effect on their "suggestibility." With other aspects of the procedure held constant, telling the subjects that they were in the hypnosis group produced a higher level of response to test suggestions than telling them that they would serve as controls.

Effects on Suggestibility of Definition of Response to Test Suggestions as Easy-Difficult

The procedure for Group A differed from that for Group B in only one respect: Group A was told that it was easy to pass the tests whereas Group B was told that it was difficult. Group A was more responsive than Group B, obtaining higher Objective and Subjective scores and smaller Verbalized Resistance scores on the Suggestibility Scale.

Similarly, the procedure for Group C and Group D differed only in one way: Group C was told that it was easy and Group D that it was difficult to pass the tests. Group C tended to obtain higher Objective scores, higher Subjective scores, and smaller Verbalized Resistance scores than Group D.

In brief, with other aspects of the procedure held constant, subjects manifested relatively high and relatively low levels of suggestibility when told that it was easy and that it was difficult to pass the tests, respectively.

Additivity of the Independent Variables

The decrements in suggestibility produced by defining the situation as control and defining response to suggestions as difficult were additive. Vice versa, the suggestibility-enhancing effects of defining the situation as hypnosis and response to suggestions as easy were also additive. The highest level of suggestibility was obtained when subjects were told both that the situation was hypnosis and that it was easy to pass the tests; the next highest level was obtained when subjects were told one of these but not the other; and the lowest level was obtained when the situation was defined as control and the test suggestions as difficult.

Limitations of the Investigation and Suggestions for Further Research

This investigation has at least three limitations:

1. It remains to be determined how defining the experimental situation as hypnosis produces a higher level of suggestibility than defining the situation as control, and how a higher level of suggestibility is produced by defining response to test suggestions as easy rather than as difficult. Although the present study does not answer these questions, a parsimonious explanation is available that can be tested empirically. It appears possible that: when college students are told they have been assigned to a hypnosis treatment, they are being told indirectly that they will be expected to respond to suggestions of sensory hallucination, body immobility, selective amnesia, and so on; and when they are told they have been assigned to a control treatment, they are being told implicitly that they will not be expected to respond to suggestions of this type. It also appears possible that: when subjects are told that it is easy to pass test suggestions, they are being told implicitly that they are expected to respond to suggestions; and when they are told that it is difficult to pass test suggestions, they are being told indirectly that they are not expected to respond to suggestions. These hypotheses can be tested in further studies by administering a standardized questionnaire to the subjects immediately following the instructions which define the situation as hypnosis or control and the test suggestions as easy or difficult. The questionnaire should be carefully designed to assess subjects' estimates of what is expected of them in the suggestive situation. We would hypothesize that: when the experimental situation is defined as hypnosis and the test suggestions as easy, subjects will state that they are expected to respond positively to all suggestions; when subjects are told *either* that the situation is hypnosis and the test suggestions are difficult *or* that the situation is control and the test suggestions are easy, they will state that they are expected to respond to some but not all suggestions; and when the experimental

situation is defined as control and the test suggestions as difficult, subjects will state that they are expected to respond to very few suggestions.

2. We do not know how subjects would have performed on the suggestibility scale if they had not been told that they were either in a hypnosis group or in a control group. Defining the situation as hypnosis may produce a high level of suggestibility only in comparison with defining the situation as control and not in comparison with a neutral condition in which the situation is defined neither as hypnosis nor as control.

We also do not know how subjects would have responded to the test suggestions if they had not been told that it was either easy or difficult to pass the tests. It may be that defining response to suggestions as easy produces a high level of suggestibility only in comparison with defining response as difficult and not in comparison with a neutral condition in which nothing is said concerning the difficulty or ease of responding to suggestions.

Further experiments designed as 3×3 factorials are needed to assess the effects on suggestibility of a neutral definition of the situation and of a neutral definition of response to test suggestions. That is, in further studies, definition of the situation should include three levels—definition of the situation as hypnosis, as control, and as neither hypnosis nor control—and definition of response to test suggestions should also include three levels—definition of response as easy, as difficult, and as neither easy nor difficult.

3. As noted in the introduction to this paper, procedures labeled as hypnotic inductions typically include four major components: The situation is defined as hypnosis, 1; an attempt is made to motivate the subject to cooperate and to try to respond to the best of his ability on suggested tasks, 2; relaxation, drowsiness, and sleep are suggested, 3; and an attempt is made to induce the subject to believe that he can now easily respond to suggestions, 4. The present experiment indicates that Component 1 (defining the situation as hypnosis) and Component 4 (defining response to test suggestions as easy) are each effective by

themselves in raising the level of suggestibility and that the two components sum to produce a still higher level of suggestibility. A recent related experiment (Barber & Calverley, 1963b) strongly indicates the following: (a) Components 1, 2, 3, and 4 in combination are effective, as compared to a neutral control condition, in enhancing response to suggestions. (b) Components 1 and 3 in combination are also effective, as compared to a neutral control condition, in producing enhanced suggestibility. (c) Components 2 and 4 in combination are also effective, in comparison with a neutral control condition, in raising the level of suggestibility. (d) Components 1, 2, 3, and 4 in combination are *not* significantly more effective than Components 1 and 3 in combination and Components 2 and 4 in combination in producing a high level of suggestibility.

To formulate general theories of "hypnotic" behavior, further experiments are required in which the effects on suggestibility of each of the four components are assessed independently and in all possible combinations. The experiment cited above (Barber & Calverley, 1963b) indicates that the suggestibility-enhancing effects of these components are not all additive; that is, it appears that a high level of response to test

suggestions may be evoked when two of the components are combined and that adding the remaining two components to the experimental procedure may fail to produce further increments in suggestibility.

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